National Institute of Environmental Health Sciences

A biometeorology study of climate and heat-related morbidity in Phoenix from 2001 to 2006

Author(s): Golden JS, Hartz D, Brazel A, Luber G, Phelan P
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Abstract:

Heat waves kill more people in the United States than hurricanes, tornadoes, earthquakes, and floods combined. Recently, international attention focused on the linkages and impacts of human health vulnerability to urban climate when Western Europe experienced over 30,000 excess deaths during the heat waves of the summer of 2003-surpassing the 1995 heat wave in Chicago, Illinois, that killed 739. While Europe dealt with heat waves, in the United States, Phoenix, Arizona, established a new all-time high minimum temperature for the region on July 15, 2003. The low temperature of 35.5 degrees C (96 degrees F) was recorded, breaking the previous all-time high minimum temperature record of 33.8 degrees C (93 degrees F). While an extensive literature on heat-related mortality exists, greater understanding of influences of heat-related morbidity is required due to climate change and rapid urbanization influences. We undertook an analysis of 6 years (2001-2006) of heat-related dispatches through the Phoenix Fire Department regional dispatch center to examine temporal, climatic and other non-spatial influences contributing to high-heat-related medical dispatch events. The findings identified that there were no significant variations in day-of-week dispatch events. The greatest incidence of heat-related medical dispatches occurred between the times of peak solar irradiance and maximum diurnal temperature, and during times of elevated human comfort indices (combined temperature and relative humidity).

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Resource Description

Early Warning System:

resource focus on systems used to warn populations of high temperatures, extreme weather, or other elements of climate change to prevent harm to health

A focus of content

Exposure :

weather or climate related pathway by which climate change affects health

Meteorological Factors, Solar Radiation, Temperature, Other Exposure

Temperature: Extreme Heat

Other Exposure: cloud cover

Geographic Feature: ☑

resource focuses on specific type of geography

Urban

Geographic Location: ☑

resource focuses on specific location

United States

Health Impact: ☑

specification of health effect or disease related to climate change exposure

Injury, Other Health Impact

Other Health Impact: high-heat-related medical dispatches from the fire department dispatch center

Intervention: ☑

strategy to prepare for or reduce the impact of climate change on health

A focus of content

Mitigation/Adaptation: ☑

mitigation or adaptation strategy is a focus of resource

Adaptation

Resource Type: ☑

format or standard characteristic of resource

Research Article

Timescale: ☑

time period studied

Time Scale Unspecified